

## CLIMATOLOGICAL DATA FOR OCTOBER, 1913.

## DISTRICT NO. 4, THE LAKE REGION.

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## GENERAL SUMMARY.

Averages of the weather conditions in the Lake region for October, 1913, show the month to have been, on the whole, warmer and wetter than usual. There was, as a rule, much cloudy weather with correspondingly little sunshine. The percentage of atmospheric moisture was above normal, especially in the eastern and central sections, which received the heaviest amounts of rainfall. Due to prevailing lower temperatures and the comparative frequency of precipitation, the latter half of the month was rather inclement, and was somewhat unfavorable for outdoor work. Frosts or freezing temperatures occurred in general by the beginning of the last decade, bringing the crop season to a close in those sections which had escaped the frost periods of the previous month, although in portions of the upper peninsula of Michigan pastures were reported as continuing green to the end of the period. While the number of thunderstorms occurring over the district was larger than usual for this season, damage occurred at but few places, chiefly in Lower Michigan, and was of only minor importance. The month was exceptionally favorable for navigation on the Great Lakes, and at Detroit the passage of vessels was reported to be considerably greater than usual for October.

The following table summarizes the chief features of meteorological interest in the various portions of the district:

Portions of States.	Mean temperature.	Departure.	Mean daily range.	Mean precipitation.	Departure.	Greatest precipitation in 24 hours.	Mean snowfall.	Number of days.			Prevailing wind direction.
								With 0.01 or more precipitation.	Clear.	Partly cloudy.	
Minnesota....	40.8	-2.8	16.6	3.16	+0.34	1.48	1.2	9	12	10	w.
Wisconsin....	47.7	-0.6	15.5	2.95	+0.51	1.50	1.3	10	13	7	sw.
Illinois.....	53.3	+0.1	13.1	2.28	-0.32	0.52	1.9	15	12	6	w.
Indiana.....	52.2	-0.7	17.5	3.08	+0.49	1.39	0.9	13	10	8	nw.
U. Michigan...	44.7	-0.4	15.6	3.07	+0.49	1.40	2.7	11	10	7	14
L. Michigan...	50.7	+1.1	14.4	3.41	+0.97	2.00	1.0	11	9	9	13
Ohio.....	53.6	+1.2	14.4	3.81	+1.25	2.12	0.8	13	9	7	15
Pennsylvania	54.4	+1.3	12.9	4.84	+1.04	1.21	9.7	15	9	6	s.
New York....	52.0	+3.1	14.4	4.71	+1.41	2.30	0.1	14	10	7	14
Vermont....	52.0	+5.0	15.6	4.49	+2.08	1.72	0.7	16	6	8	17

## TEMPERATURE.

As indicated above, mean temperatures of the month were, as a rule, above normal, the excess being but slight over the central and southern sections and increasing gradually to about 5° over the Champlain Valley. Around western Lake Superior, however, temperatures of the last two weeks were so low as to bring the mean of that region to a value considerably below the seasonal average. The absolute range for the entire district was 90°, from 93°, at Keene Valley, N. Y., on the 10th, to 3°, at Stephens Mine, Minn., on the 30th.

The first half of the month was warm and pleasant, the daily mean temperatures during the 8th to 10th reaching values of from 14° to 20° above the normals for

the season, with maximum readings at a number of stations equaling or exceeding previous October records. After the middle of the second decade colder weather set in, comparatively low temperatures persisting during the remainder of the month over the central and western sections. Over the eastern portions, however, where the average excess in temperature was most pronounced, the 23d to 29th marked another period of warmth. The coldest weather occurred generally on the 21st or 22d, but in the Wisconsin, New York, and Vermont portions of the district the severest conditions were delayed until the 31st.

## PRECIPITATION.

In point of time precipitation was well distributed throughout the month, but was considerably heavier in amount during the latter half. The scarcity of water which had prevailed in eastern sections since the early summer continued through the first portion of the month, notwithstanding the rains of that period, but the situation was materially relieved by the generous amounts which fell after the first decade, saturating the surface soil, and filling streams, so that many industries using water power, suspended for some time, were enabled to resume operations. The precipitation of the month was slightly above normal over most of the upper Lake sections, the departures increasing thence eastward to between +1 and +2 inches over the lower Lakes and the Champlain watershed.

As a rule, not more than the usual amounts of snow fell during the month, and many stations received none at all. From 6 to 9 inches occurred on the southern shore of central Lake Erie and in the highlands of New York State. At the end of the month many of the tops of the Green Mountains and of the Adirondacks were capped with snow, but on the lower levels the ground was bare.

## MISCELLANEOUS.

*Hail.*—Whiting, Ind., on the 2d. *Sleet.*—Grand Haven, Mich., on the 20th, 27th, and 29th. *Dense fog* occurred on several days at various places throughout the Lake region, but the only hindrance caused by fog to navigation was reported from Port Huron, Mich., on the night of the 24th-25th.

## OCTOBER LAKE LEVELS.

The following data are from the report of the United States Lake Survey:

	Lake Superior.	Lakes Michigan and Huron.	Lake Erie.	Lake Ontario.
Above tidewater at New York.....	Feet. 603.03	Feet. 580.70	Feet. 572.42	Feet. 246.29
Above or below:				
Stage of September, 1913.....	+0.20	-0.23	-0.34	-0.45
Stage of October, 1912.....	+0.43	+0.22	+0.27	+0.12
Mean stage of October last 10 years.....	+0.27	+0.04	+0.26	+0.35
Highest recorded stage.....	-0.53	-2.27	-1.28	-1.52
Lowest recorded stage.....	+1.45	+1.19	+1.62	+2.62
Probable change during November.....	-0.20	-0.30	-0.30	-0.30

TABLE 1.—*Climatological data for October, 1913. District No. 4, Lake Region.*

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.				Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmeasured.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	Pervailing wind direction.	
<b>Minnesota.</b>																				
Cloquet.....	Carlton.....	800	2	40.6	- 4.5	77	3†	5	31	45	3.32	+ 0.59	1.23	2.0	8	12	10	9	w.	State Forest Exp. Station.
Duluth.....	St. Louis.....	1,133	42	40.7	- 4.5	77	3	14	21	32	3.33	+ 0.59	1.44	1.0	10	6	12	13	w.	U. S. Weather Bureau.
Floodwood.....	do.....	1,257	6																M. H. Schussler.	
Grand Marais.....	Cook.....																		E. L. Derry.	
Stephens Mine.....	St. Louis.....	1,500	6	39.2		75	3	3	30	43	3.29		0.80	0.9	9	6	12	12	w.	Oliver Iron Mining Co.
Two Harbors.....	Lake.....	614	19	43.8	- 1.4	71	3	14	22	36	2.45	- 0.40	1.48	0					G. W. Watts.	
Virginia.....	St. Louis.....	1,434	19	39.7	- 2.6	76	3	7	30	36	3.41	+ 0.83	0.70	2.0					Oliver Iron Mining Co.	
<b>Wisconsin.</b>																				
Appleton.....	Outagamie.....	795	12	48.5	- 0.8	79	4	20	31	35	2.80	+ 0.76	0.92	1.0	11	19	6	6	sw.	Wm. O. Thiede.
Ashland.....	Ashland.....	615	22	44.2	- 3.6	80	3	15	22	48	3.73	+ 1.31	0.83	3.5	12	12	2	17	sw.	Agricultural Exp. Station.
Bayfield.....	Bayfield.....	635	4	46.5	- 1.3	77	3	19	22	33	4.61	+ 1.91	1.04	13.0	11	12	10	9	sw.	Rev. Sabimus Molitor.
Cecil.....	Shawano.....	804	15	46.9	- 1.0	76	5	22	30	36	1.46	- 1.13	0.54	T.	6	13	9	se.	Louis W. Schmidt.	
Cornucopia.....	Bayfield.....	640	1	49.1*		77*	3	22*	22*	38*					6*	8*	10*		Reed Fruit Co.	
Crandon.....	Forest.....	1,060	18	43.6	- 1.3	74	4	17	22	35	2.50	+ 0.18	0.83	T.	7	13	5	13	nw.	Frank Shoemaker.
Florence.....	Florence.....	1,293	22	44.9*	+ 0.4	74b	4	21b	31	39b	3.19	+ 0.52	1.13	T.	7	13	3	15	nw.	Fred S. Evans.
Fond du Lac.....	Fond du Lac.....	800	27	48.8	+ 0.1	80	4	20	31	38	3.69	+ 1.61	1.30	2.5	12	20	2	9	ne.	Edward A. Seeley.
Grand River Locks.....	Marquette.....	770	17	48.7		78	4†	19	31	40	2.93	+ 0.02	1.15	5.0	12	17	4	10	s.	Jerry Parkinson.
Green Bay.....	Brown.....	617	27	48.2	+ 1.1	80	4	21	31	27	2.55	+ 0.18	0.84	T.	11	8	10	13	s.	U. S. Weather Bureau.
High Falls.....	Marinette.....	1,125	1	45.4		79	4	15	22	49	2.54		0.94	T.	8	19	6	6	nw.	No. Hydro-Elec. Pow. Co.
Iron River.....	Bayfield.....	1,096	4	44.4*							42*	4.20		1.00	0	10	9	21	sw.	Winfield E. Tripp.
Keweenaw.....	Keweenaw.....	590	48	48.1		74	1	21	31	28	3.80		1.15	0	8	8	8	15	n.	Anton M. Jessen.
Manitowoc.....	Manitowoc.....	616	62	48.6	+ 0.1	73	1	23	31	25	3.75	+ 1.19	1.50	T.	9	6	6	15	sw.	Miss Johanna Luups.
Menasha.....	Winnebago.....	784	16										1.12	0.5	9	17	5	12	sw.	Geo. T. Allanson.
Menomonee Falls.....	Waupaca.....	842	4	48.2		77	10	21	31	30	2.98		0.80	1.2	13	15	9	7	nw.	Arthur H. Christman.
Milwaukee.....	Milwaukee.....	681	43	50.4	+ 0.2	77	10	25	31	23	3.50	+ 1.17	1.40	1.0	11	12	5	14	sw.	U. S. Weather Bureau.
New London.....	Outagamie.....	762	17	47.2	- 1.6	79	10	18	31	36	2.24	- 0.36	0.55	1.0	7	8	8*	14	nw.	August H. Pape.
Oconto.....	Oconto.....	590	22	48.8	+ 0.2	77	4	19	31	35	2.16	- 0.18	0.60	0	7	17	4	10	w.	Harry M. Lord.
Oshkosh.....	Winnebago.....	744	24	47.7	- 1.7	81	4	23	23	34	1.53	- 0.68	0.42	1.0	6	15	12	4	sw.	Evan Vincent.
Pine River.....	Waushara.....	900	18	50.9	+ 2.0	79	4	17	31	36	1.90	- 0.60	0.74	2.0	8	8	8	17	sw.	Geo. H. Carpenter.
Plum Island.....	Door.....	588	5	48.8		71	1	29	31	24	2.75		0.83	T.	8	6	6	17	s.	Wm. Robinson.
Plymouth.....	Sheboygan.....	843	3	48.6*		78b	4	25*	31	31b	3.78		1.40	0.4	12	11	9	11	nw.	Paul O. Feldrappe.
Port Washington.....	Ozaukee.....	713	20	48.6	- 1.1	75	7	23	31	26	2.98	+ 0.98	0.90	1.0	10	12	3	16	nw.	Richard C. Kahn.
Racine.....	Racine.....	633	16	51.6	- 1.0	78	7†	23	31	29	4.69	+ 2.73	1.35	1.0	15	15	2	14	sw.	Daniel Davis.
Ripon.....	Fond du Lac.....	1,031	3	48.3		78	4	19	31	29	2.85		1.00	2.0	13	15	11	5	n.	Ripon College.
Sheboygan.....	Sheboygan.....	831	14	49.0	- 1.8	74	1	25	31	25	2.91	+ 0.42	0.76	T.	8	9	7	15	nw.	Louis C. Meyer.
Sturgeon Bay.....	Door.....	600	14	46.9	+ 0.7	75	1†	26	31†	35	3.36		1.13	T.	12	11	11	9	nw.	Adam N. Dier.
Superior.....	Douglas.....	701	4	41.6		78	3	16	21	35	3.87		1.05	0.4	11	13	9	12	sw.	Edward B. Banks.
Waupaca.....	Waupaca.....	857	18	46.9	- 1.5	80	4	17	31	40	2.47	- 0.06	0.80	0.8	9	14	5	12	sw.	James H. Flagg.
<b>Illinois.</b>																				
Chicago.....	Cook.....	823	43	53.3	+ 0.1	83	10	27	21	21	2.23	- 0.32	0.52	1.9	15	12	6	13	w.	U. S. Weather Bureau.
Highland Park.....	Lake.....	691	-----								3.16	+ 0.98	1.27	3.0	9					Jesse L. Smith.
<b>Indiana.</b>																				
Auburn.....	Dekalb.....	874	17	49.9*	- 1.1	86	9	26*	22	38	3.37	+ 1.07	1.39	T.	6	6	5*	12*	nw.	Mrs. Josie B. Kuhlman.
Berne.....	Adams.....	849	4	53.5		88	10	24	22	33	2.52		0.57	T.	12	9	8	14	sw.	Henry M. Reusser.
Fort Wayne.....	Allen.....	856	17	53.4	- 0.3	86	10	29	22	32	2.33	- 0.09	1.03	T.	16	13	11	9	n.	U. S. Weather Bureau.
Hammond.....	Lake.....	598	22																Carson W. Whitney.	
Howe.....	Lagrange.....	886	8	51.9		88	9†	26	26	40	4.32		1.01	2.0	10	12	0	19	nw.	A. A. Wade.
Notre Dame.....	St. Joseph.....	712	3	52.3		84	10	28	21	35	3.22		1.01	T.	12	10	15	6	se.	U. S. Weather Bureau.
Whiting.....	Lake.....	606	4	52.4		84	10	28	31	30	2.69		0.39	T.	13	10	8	13	nw.	D. H. Boyd.
<b>Michigan—Upper Peninsula.</b>																				
Baraga.....	Baraga.....	623	11	39.3	- 8.3	82	3	8	31	45	2.90	+ 0.25	0.50	6.0	12	7	0	24	w.	D. S. S. & A. Hy.
Bergland.....	Ontonagon.....	1,300	3	44.6		81	11	19	22	49	1.79		0.48	2.4	7	10	1	20	sw.	Frank McMonical.
Calumet.....	Houghton.....	1,246	25	42.6	- 1.4	73	3	23	21†	32	3.00	- 0.02	0.63	3.0	7	7	11	13	n.	E. S. Grierson.
Chatham.....	Alger.....	875	12	43.2	- 1.7	73	1†	15	31	47	4.85	+ 1.90	1.30	1.0	8	9	8	14	sw.	Upper Peninsula Exp. Sta.
Deer Park.....	Luce.....	610	13																McGraw.	
Eagle Harbor.....	Keweenaw.....	622	14	49.5	- 1.6	73	3	26	23	29	2.90	+ 0.56	0.70	T.	5	15	0	16	w.	Mrs. Sarah E. McGraw.
Escanaba.....	Delta.....	612	40	45.3	+ 0.2	65	1	21	31	24	1.83	- 1.28	0.41	T.	11	9	9	13	s.	T. J. Bennets.
Ewen.....	Grand Marais.....	1,147	12																w.	W. B. Hatfield.
Grand Marais.....	Alger.....	610	12	45.6	- 1.0	69	9	28	30	27	4.36	+ 1.47	1.10	T.	11	14*	2*	14*	s.	Mrs. Lena Truedell.
Houghton.....	Houghton.....	668	12	44.4	+ 0.4	75	3	24	31	39	3.12	- 0.06	0.73	6.7	16	4	7	18	w.	U. S. Weather Bureau.
Humboldt.....	Marquette.....	1,536	16	43.0*	+ 0.6	76*	4	18*	20*	40*	1.78	- 0.54	0.98	3.0	5*	11*	3*	16*	w.	D. S. S. & A. Ry.
Iron Mountain.....	Dickinson.....	1,111	13	45.0	+ 0.4	75	3†	21	25	39	2.36	+ 0.06	0.72	T.	9	5	16	10	nw.	Chapin Mining Co.
Iron River.....	Iron.....	1,504	13	43.2	- 0.3	77	3	21	20	41	3.75	+ 0.14	1.20	T.	9	12	14	5	nw.	Victor D. Laing.
Ironwood.....	Gogebic.....	1,520	10	44.2	- 0.9	75	3	16	22	35	3.46	+ 0.86	0.91	11.0	12	13	9	10	sw.	J. V. Brennan.
Ishpeming.....	Marquette.....	1,536	13	43.2*	- 2.2	73*	4	18	31	38*	5.21	+ 2.33	1.27	7.5	15	7	22	nw.	Cleveland Cliffs Iron Co.	
Ish Royale.....	Keweenaw.....	610	6																n.	J. A. Malone.
Mackinac Island.....	Mackinac.....	831	12																n.	Herman Johnson.
Maple Ridge.....	Delta.....	7	44.4			74	1	19	31	37	3.15		0.80	0	9	11	11	9	n.	P. S. Weather Bureau.
Marquette.....	Marquette.....	734	42	46.4	- 0.7	75	1	24	31	28	3.20	+ 0.01	1.02	1.7	13	4	10	17	sw.	Chief of Fire Dept.
Menominee.....	Menominee.....	581	14	48.3*	- 1.3	72*	4	21b	31b	28*	1.56	- 0.84	0.46	4.4	7	20*	2*	28*	n.	Albert Oas.
Munising.....	Alger.....	631	16	48.4	+ 1.8	77	1	25	30	34	4.00	+ 1.48	0.73	5.2	18	8	8	15	n.	John Brown.
Newberry.....	Luce.....	773	11	45.8	- 0.2	73	4	23	31	32	3.39	+ 1.21	0.77	0.5	16	5	11	15	s.	T. A. Green.
Ontonagon.....	Ontonagon.....	1,147	12	46.6		78	3†	22	18†	37	2.10		0.80	2.0	10	12	2	17	sw.	

TABLE 1.—Climatological data for October, 1913. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.	Prevailing wind direction.	Observers.			
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unseated.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.				
<i>Michigan—Lower Peninsula—Continued.</i>																					
Ann Arbor.	Washtenaw.	930	33	52.0	+ 2.1	83	7†	29	22†	30	3.86	+ 1.20	0.79	2.1	11	14	0	17	w.	University of Michigan.	
Arbela.	Tuscola.	728	17	50.4	+ 0.4	81	7†	22	31	34	3.92	+ 0.83	1.10	5.0	9	2	11	18	ne.	Wm. Atkin.	
Armada.	Macomb.	24	50.2 <sup>b</sup>	+ 1.3	85 <sup>b</sup>	7	26 <sup>b</sup>	31	39 <sup>b</sup>	3.98	+ 1.25	0.80	T.	10 <sup>b</sup>	16 <sup>b</sup>	11 <sup>b</sup>	17	nw.	R. O. Gould.		
Battle Creek.	Calhoun.	822	29	50.2	- 1.6	83	7†	27	28	33	4.73	+ 1.37	1.05	2.0	11	9	5	17	nw.	Elmer E. Sager.	
Bay City.	Bay.	593	17	52.0	+ 1.9	84	7	25	31	32	—	—	0	—	12	12	4	12	ne.	Pere Marquette R. R.	
Benzonia.	Benzie.	832	16	49.0	+ 1.6	79	7	28	30†	25	2.73	- 0.49	0.60	2.0	12	12	4	14	nw.	Wallace Nutting.	
Big Rapids.	Mecosta.	906	17	50.4	+ 2.3	81	7	26	19†	30	4.37	+ 1.46	0.73	0	14	1	24	6	nw.	Supt. Water Works.	
Bloomingdale.	Vanhuren.	—	—	—	—	82	9†	31	19†	36	2.71	—	0.72	1.0	6	10	8	13	ne.	John M. Haven.	
Cadillac.	Wexford.	1,293	4	48.7	—	77	7	25	31	31	3.40	—	1.06	2.0	10	15	6	13	n.	Cadillac W. & L. Co.	
Cassopolis.	Cass.	903	—	—	—	84	9†	—	—	—	—	—	—	—	—	—	—	—	ne.	Pere Marquette R. R.	
Charlevoix.	Charlevoix.	610	35	51.4 <sup>c</sup>	+ 2.0	78 <sup>c</sup>	14	34 <sup>c</sup>	30 <sup>c</sup>	20 <sup>c</sup>	—	—	—	—	—	—	—	—	ne.	City of Charilote.	
Charlotte.	Eaton.	—	9	51.1	—	82	7†	26	26	35	3.45	—	1.20	T.	6	11	4	16	w.	Francis A. Barlow.	
Cheboygan.	Cheboygan.	611	23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	ne.	David Woodward.	
Clinton.	Lennwee.	830	23	53.2	+ 2.3	82	7	27	22	36	3.75	+ 1.37	0.82	0	9	8	11	12	nw.	L. S. & M. S. R. R.	
Coldwater.	Branch.	984	16	53.6	0.0	86	10	26	26	32	4.03	+ 0.56	0.79	4.5	11	11	12	12	s.	Gr. Rap. Musk. Power Co.	
Croton.	Newaygo.	685	5	51.4	—	81	10	28	19†	30	4.42	—	1.00	T.	12	2	17	12	sw.	U. S. Weather Bureau.	
Detroit.	Wayne.	730	42	53.2	+ 1.5	82	7	30	31	24	3.94	+ 1.56	0.83	1.4	5	13	13	13	s.	Chief Train Dispatcher.	
Durand.	Shiawassee.	789	5	50.6 <sup>d</sup>	—	88 <sup>d</sup>	7	28 <sup>d</sup>	26	36	2.71	—	0.30	0	8 <sup>d</sup>	12 <sup>d</sup>	0 <sup>d</sup>	13 <sup>d</sup>	ne.	Detroit & Mackinaw Ry.	
East Tawas.	Iosco.	580	16	49.4 <sup>e</sup>	+ 0.6	72	7†	23	31	25	2.66	+ 0.14	0.50	0	8	12	14	5	sw.	John Gilmore.	
Eloise.	Wayne.	640	16	52.4	- 0.3	89	8	30	22†	39	4.50	+ 2.04	0.93	T.	15	8	16	16	w.	Au Sable Electric Co.	
Five Channels.	Iosco.	—	0	51.0	—	81	7	25	19	42	1.92	—	0.66	T.	10	13	7	11	w.	William L. Fisher.	
Flint.	Genesee.	730	24	51.4	+ 2.6	84	7	27	36	33	3.25	+ 1.20	0.95	0	12	7	10	14	w.	Geo. Morenry.	
Frankfort.	Benzie.	589	9	49.2	—	74	10	33	23	21	2.68	—	0.77	0	7	12	0	19	s.	H. H. Hutchins.	
Ganges.	Allegan.	665	4	51.6	—	83	10	30	24	34	4.21	—	0.75	1.0	14	12	3	11	nw.	Michigan Central R. R.	
Gaylord.	Otsego.	1,367	13	47.6	+ 2.2	80	4†	24	25†	29	2.99	- 0.28	1.07	—	11	7	0	24	se.	Geo. R. Smith.	
Gladwin.	Gladwin.	794	17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	se.	U. S. Weather Bureau.	
Grand Haven.	Ottawa.	828	42	50.2	0.0	78	10	30	28	27	3.08	+ 0.80	1.05	0.1	17	9	9	13	se.	Do.	
Grand Rapids.	Kent.	707	24	51.8	+ 1.7	84	10	32	31	26	2.92	+ 0.58	0.92	0.3	19	8	12	13	s.	Joseph W. Morris.	
Grape.	Monroe.	625	23	52.6	+ 0.9	85	10	27	22	36	3.79	+ 1.22	0.72	T.	14	10	8	13	w.	Menzo Conklin.	
Grass Lake.	Jackson.	989	7	51.8	—	85	7	28	26	30	4.56	—	0.75	2.0	10	16	8	7	sw.	S. N. Insley.	
Grayling.	Crawford.	1,147	23	48.4	+ 2.1	87	1	22	31	40	4.15	+ 1.79	1.22	8.1	13	7	9	15	w.	Michigan Pickle Co.	
Greenville.	Montcalm.	802	1	—	—	86	7	—	—	—	—	—	—	1.00	0	6	7	8	18	se.	Pere Marquette R. R.
Harbor Beach.	Huron.	635	26	51.3	+ 2.0	76	4	21	24	32	4.82	+ 2.15	1.30	0	11	9	8	14	s.	Do.	
Harrison.	Clare.	1,159	20	51.5	+ 5.8	80	4	23	31	33	1.72	- 0.89	0.74	0	3	15	8	10	sw.	Mrs. D. W. Mitchell.	
Harrisville.	Alcona.	616	24	48.9	+ 0.9	74	6†	22	31	27	4.31	+ 1.58	1.20	T.	8	11	7	13	nw.	Pere Marquette R. R.	
Hart.	Oceana.	698	21	50.1 <sup>a</sup>	+ 0.2	85 <sup>a</sup>	7	27 <sup>a</sup>	20	—	3.25	+ 0.51	0.81	0	8 <sup>a</sup>	3 <sup>a</sup>	18 <sup>a</sup>	9 <sup>a</sup>	n.	C. F. Leipprandt.	
Hayes.	Huron.	620	23	50.1 <sup>b</sup>	+ 0.2	85 <sup>b</sup>	7	20	31	31	3.82	+ 0.92	1.29	3.0	5	14	18	9	nw.	A. D. De Garmo.	
Highland.	Oakland.	1,006	21	51.5	0.0	84	7†	25	26	33	4.90	+ 2.34	1.30	1.0	12	11	6	14	w.	C. L. Herron.	
Hillsdale.	Hillsdale.	1,150	16	51.5	—	84	7	29	28	33	4.74	+ 1.93	0.97	1.5	11	8	9	14	nw.	City of Holland.	
Holland.	Ottawa.	610	7	52.6	—	83	9	29	28	33	3.05	—	0.45	T.	16	5	19	7	sw.	James H. Ostrander.	
Houghton Lake.	Roscommon.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Howell.	Livingston.	924	21	52.4	+ 2.8	82	7†	28	26	36	4.56	+ 2.40	0.80	0.1	14	11	6	14	nw.	Frank Sharp.	
Ivan.	Kalkaska.	449	24	49.1	+ 2.7	80	7	20	31	31	3.82	+ 0.92	1.29	3.0	5	14	18	9	nw.	O. L. Giddings.	
Jackson.	Jackson.	927	16	52.2	- 0.4	86	7†	25	26	36	4.26	+ 1.67	0.91	1.0	12	11	6	14	s.	City of Jackson.	
Jeddo.	St. Clair.	667	24	51.6	+ 2.1	84	7	25	31	36	3.44	+ 0.98	0.72	0	10	6	10	15	nw.	William Bice.	
Johannesburg.	Osceola.	—	0	46.9	—	80	5†	20	31	33	3.74	—	1.24	4.0	10	3	21	7	w.	Axel Becker.	
Kalamazoo.	Kalamazoo.	955	37	50.8	- 0.1	84	9	27	28	30	4.28	+ 1.67	0.95	T.	8	5	17	9	w.	Kalamazoo Asylum.	
Lansing (Agr. Col.).	Ingham.	863	49	50.2	+ 1.2	84	7	27	28	33	3.30	+ 1.07	0.97	6.2	6	5	12	14	nw.	U. S. Weather Bureau.	
Lansing (capital).	—	881	26	50.8	+ 1.3	86	7	28	26†	33	3.94	+ 1.25	1.10	7.5	14	8	3	20	nw.	State Board of Health.	
Leper.	Lapeer.	827	14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Ludington.	Mason.	837	15	49.2	- 1.3	78	10	21	31	31	2.82	+ 0.70	1.31	T.	15	4	12	15	s.	Michigan Home.	
Luther.	Lake.	1,028	3	49.0	—	82	7	19	31	39	3.78	—	0.99	1.7	20	8	13	13	s.	U. S. Weather Bureau.	
Mackinaw.	Cheboygan.	592	22	44.0	- 3.8	68	10	24	30	33	2.95	- 0.05	1.00	3.5	10	11	13	7	e.	John W. Nicholson.	
Mancelona.	Antmire.	1,121	17	47.5 <sup>c</sup>	0.3	78 <sup>c</sup>	4†	9 <sup>c</sup>	29	30 <sup>c</sup>	3.27	—	0.96	0	11 <sup>c</sup>	16 <sup>c</sup>	0 <sup>c</sup>	17 <sup>c</sup>	s.	Grand Rapids & Indiana Ry.	
Manistee.	Manistee.	600	16	50.5 <sup>b</sup>	+ 1.9	81 <sup>b</sup>	10	31 <sup>b</sup>	29 <sup>b</sup>	30 <sup>b</sup>	3.14	+ 0.42	0.90	0	11 <sup>b</sup>	16 <sup>b</sup>	0 <sup>b</sup>	14 <sup>b</sup>	s.	Postmaster.	
Marshall.	Calhoun.	896	1	57.3 <sup>d</sup>	—	84 <sup>d</sup>	7†	37 <sup>d</sup>	27 <sup>d</sup>	26 <sup>d</sup>	3.07	—	1.57	0.30	T.	4	7	3	21	sw.	E. B. Stuart.
Midland.	Midland.	604	14	51.7	+ 1.6	82	7	25	31	31	0.90	- 1.57	0.30	T.	4	7	3	11	s.	Pere Marquette R. R.	
Morenci.	Lenswee.	811	6	52.6	—	86	7	27	22	36	3.32	—	1.02	T.	12	10	6	15	nw.	George J. Tripp.	
Mount Clemens.	Macomb.	615	12	52.4	+ 0.3	81	7	23	31	37	4.28	—	0.86	0	10	12	8	11	nw.	Water works.	
Mount Pleasant.	Isabella.	826	14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Muskegon.	—	587	17	50.8	- 0.3	84	7	30	20	35	4.01	+ 1.55	0.60	T.	12	12	1	18	n.	Pere Marquette R. R.	
Old Mission.	Grand Traverse.	888	19	49.0	- 0.7	80	7	28	31	29	3.12	+ 0.11	0.80	0.5	15	2	18	11	n.	Grand Rapids & Indiana Ry.	
Olivet.	Eaton.	834	14	50.8	+ 1.9	83	7†	25	26	30	4.32	+ 1.69	0.86	2.3	12	14					

TABLE 1.—Climatological data for October, 1913. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.				Precipitation, in inches.				Sky.	Prevailing wind direction.	Observers.	
				Mean.	Highest.	Lowest.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmeasured.	Number of rainy days, 0.01 inch or more.	Number of partly cloudy days.	Number of cloudy days.	
<b>Ohio—Continued.</b>															
Cleveland (2).	Cuyahoga	754	16	53.7	+ 0.7	81	9†	28	22	32	4.54	+ 1.62	1.04	T.	Rev. F. L. Odenbach, S. J.
Conneaut.	Ashland	675	3	54.0	-	84	10	26	22	33	5.76	-	1.12	4.5	E. L. Ransom.
Findlay.	Hancock	776	24	53.9	+ 1.2	88	10	26	22	44	6.33	+ 4.21	2.12	T.	Dr. E. A. Moser.
Fremont.	Sandusky	628	11	53.5	+ 0.6	85	9	27	23	35	3.92	+ 1.10	0.80	T.	E. Stanley Thomas.
Hedges.	Paulding	725	19	56.0	+ 3.6	90	12	25	21†	51	3.21	+ 1.04	1.98	3.3	Charles Stutzman.
Hillhouse.	Lake	997	20	52.6	+ 1.0	81	9†	24	22	37	6.51	+ 2.32	2.00	T.	J. W. Doncaster.
Hiram.	Portage	1,260	33	52.4	+ 1.6	82	6	25	21	36	4.84	+ 2.02	1.06	T.	Prof. G. H. Colton.
Hudson.	Summit	1,123	52	53.6	+ 2.1	83	9	25	21	35	4.56	+ 1.87	0.94	T.	Dr. W. L. Chamberlain.
Lima.	Allen	875	14	53.6	+ 0.8	85	10	27	21	32	2.61	+ 0.35	0.65	T.	Miss Ollie De Long.
Medina.	Medina	944	25	53.4	+ 1.2	85	6	25	23	41	4.11	+ 1.71	1.03	T.	F. W. Clark.
Montpelier.	Williams	880	21	53.2	+ 2.1	86	10	27	23	37	3.44	+ 1.19	0.87	T.	G. L. Laser.
Napoleon.	Henry	680	26	52.8	- 0.2	86	7†	26	21	33	2.80	+ 0.84	0.71	T.	A. C. Senter.
New Bremen.	Auglaize	1,038	20	54.0	+ 0.2	88	7	26	22	34	2.48	+ 0.57	0.65	T.	Miss Lillian Grothaus.
North Royalton.	Cuyahoga	1,000	20	53.7	+ 1.0	80	10	27	22	34	4.13	+ 1.35	1.08	T.	W. S. Edgerton.
Northwalk.	Huron	719	27	53.9	+ 1.0	88	9	26	21	32	3.35	+ 1.09	0.70	T.	Giles R. Gregory.
Oberlin.	Lorain	855	38	53.0	+ 1.2	85	9	24	22	37	2.99	+ 0.54	0.66	T.	Prof. F. J. Jewett.
Ottawa.	Putnam	720	20	53.4	+ 0.8	85	7†	25	22	33	3.65	+ 1.65	0.80	T.	Prof. J. T. Maidlow.
Sandusky.	Eric	629	36	53.8	- 0.1	84	10	29	23	31	2.37	- 0.06	0.70	T.	U. S. Weather Bureau.
Tiffin.	Seneca	775	31	55.4	+ 3.3	86	9	28	22	36	3.52	+ 1.18	0.65	T.	Prof. T. H. Sonnedecker.
Toledo.	Lucas	786	42	53.8	+ 1.2	84	10	30	22	31	3.62	+ 1.36	1.03	T.	U. S. Weather Bureau.
Upper Sandusky.	Wyandot	854	30	53.4	+ 0.3	84	10	26	22	34	3.21	+ 0.75	0.68	T.	Robert E. Tracht.
Vickery.	Sandusky	588	20	53.8	+ 1.0	87	10	25	22	38	3.04	+ 0.41	0.61	T.	John W. Barr.
Wapakoneta.	Auglaize	898	1	52.0	-	86	10	26	22	39	2.95	-	0.60	T.	Dr. William Kayser.
Watseka.	Fulton	780	41	52.2	+ 1.2	87	10	26	22	35	3.18	+ 0.75	0.81	T.	Thomas Mikesell.
Wickliffe.	Lake	740	1	-	-	-	-	-	-	-	5.09	-	1.17	T.	C. M. Richardson.
<b>Pennsylvania.</b>															
Erie.	Erie	658	40	54.4	+ 1.3	82	10	33	21	24	4.84	+ 1.04	1.21	9.7	U. S. Weather Bureau.
<b>New York.</b>															
Adams Center.	Jefferson	540	22	53.0	+ 5.5	82	7	26	31	33	6.59	+ 2.16	1.65	0.5	A. E. Cooley.
Angelica.	Allegany	1,340	30	49.5	+ 2.7	77	4	23	14	39	3.99	+ 0.98	0.78	0.5	C. P. Arnold.
Appleton.	Niagara	270	22	53.2	+ 3.2	80	9	30	31	2.12	- 0.78	0.95	0.1	H. A. Van Wagoner.	
Avon.	Livingston	588	18	53.4	+ 3.5	82	7	33	14	33	3.31	+ 0.76	0.90	0	W. G. Markham.
Brockport.	Monroe	537	17	52.3	+ 1.4	82	7	23	31	34	2.88	- 0.14	0.84	1.0	C. O. Beaman.
Buffalo.	Erie	767	62	53.4	+ 1.9	82	7	30	31	32	3.65	+ 0.12	1.13	0.4	U. S. Weather Bureau.
Canisius College.	do	0	52.8	-	81	8	28	31	32	3.69	-	1.17	0.2	Do.	
Canton.	St. Lawrence	448	19	50.8	+ 3.6	81	7	22	31	33	5.87	+ 2.53	2.27	T.	Do.
Cape Vincent.	Jefferson	246	8	52.6	-	75	9	26	31	33	4.62	-	1.58	0	J. H. Grapotte.
Chazy.	Clinton	151	13	52.5	+ 4.3	78	7†	25	31	36	2.99	+ 0.27	1.20	0	W. R. North.
Chestnut Lawn.	Wyoming	1,090	1	52.1	-	84	6†	27	31	38	4.25	+ 0.63	-	4.0	Charles Peterson.
Dannemora.	Clifton	1,490	8	51.6	-	80	6	20	31	26	4.98	-	1.10	0.8	Dr. D. L. Van Derzee.
Elba.	Genesee	500	14	50.8	+ 1.0	79	7†	23	31	33	1.60	- 1.17	0.52	T.	Joseph S. Wilford.
Fayetteville.	Onondaga	530	12	53.9	+ 3.2	85	11	28	34	40	4.13	+ 0.73	1.38	1.0	Dana H. Wells.
Gabriels.	Franklin	1,729	11	48.6	-	82	7	19	31	44	4.36	-	0.90	0.5	Gabriel's Sanitarium.
Geneva.	Ontario	550	0	54.0	-	81	6	29	31	34	4.03	-	1.61	T.	Agr. Exp. Station.
Harkness.	Clinton	622	11	52.3	+ 5.1	80	6	26	31	30	3.94	+ 1.45	1.25	0.5	J. W. Harkness.
Hemlock Lake.	Livingston	900	15	53.8	+ 2.8	79	6	29	31	38	4.54	+ 2.03	1.34	1.0	B. P. McGrady.
Hunt.	do	1,321	14	54.0	+ 3.2	87	7	29	31	41	4.30	+ 1.37	0.86	2.0	W. S. Baranger.
Ithaca.	Tompkins	928	35	53.4	+ 3.9	81	6	28	31	38	3.63	+ 0.46	1.35	0.1	U. S. Weather Bureau.
Keene Valley.	Essex	1,000	15	51.9	+ 4.8	93	10	20	31	54	4.94	+ 1.47	1.64	0.2	E. R. Wells.
King Ferry.	Cayuga	13	-	-	-	-	-	-	-	-	3.70	+ 0.28	1.41	1.5	L. A. Goodyear.
Lake George.	Warren	350	16	54.4	+ 4.8	82	10	25	22	39	5.64	+ 2.15	1.83	0	Chas. Forsell.
Lake Placid Club.	Essex	1,864	5	43.1	-	75	7†	14	31	39	4.88	-	0.87	10.3	H. Van Hoovenberg.
Lauterbrunnen.	Wyoming	1,260	1	52.0	-	84	7	28	31	40	4.71	-	0.75	T.	James O. Howard.
Lockport.	Niagara	520	26	53.0	+ 1.1	84	7	28	31	32	2.67	+ 0.02	1.05	8	R. N. Clark.
Lowville.	Lewis	900	46	54.0	+ 7.8	79	10	23	31	36	7.05	+ 3.66	1.70	0.1	Prof. W. F. H. Breeze.
Moirs.	Franklin	200	13	50.6	+ 2.5	82	6	22	31	39	5.57	+ 2.82	2.01	T.	C. E. McBride.
Nehasane.	Hamilton	1,750	5	48.4	-	79	7†	19	31	46	6.92	-	1.86	6.1	L. W. Brown.
Ogdensburg.	St. Lawrence	175	29	52.0	+ 1.9	81	10	24	31	33	6.28	+ 3.94	1.80	T.	State Hospital.
Old Forge.	Hermiker	1,733	5	49.6	-	80	5†	20	31	47	6.67	-	2.30	0	Mrs. S. W. Nelson.
Oswego.	Oswego	335	43	53.8	+ 2.6	76	7	32	31	23	4.98	+ 1.64	1.45	1.4	U. S. Weather Bureau.
Palermo.	do	460	54	-	-	-	-	-	-	-	5.18	+ 1.63	1.49	5	Wm. A. Bartlett.
Perry City.	Schuyler	1,038	33	49.3	+ 1.5	77	9	23	31	37	4.25	+ 0.36	1.50	0.8	W. H. Jeffers.
Philadelphia.	Jefferson	485	7	53.1	-	85	7	19	31	33	8.27	-	1.67	T.	E. D. Babcock.
Potsdam.	St. Lawrence	300	37	51.2	+ 6.1	79	10	24	31	30	5.62	+ 3.28	1.40	0	A. E. Sutherland.
Ranger School.	do	1,750	0	-	-	-	-	-	-	-	6.78	-	1.45	1.4	Prof. R. P. Prichard.
Raquette Lake.	Hamilton	1,776	5	49.1	-	79	7	20	31	37	6.12	-	1.98	1.2	R. J. Dunning.
Rochester.	Monroe	523	84	54.1	+ 3.3	83	8	30	31	38	2.93	+ 0.07	0.77	0.2	U. S. Weather Bureau.
Romulus.	Seneca	719	21	53.2	+ 2.1	80	11	28	31	30	5.65	+ 2.43	1.98	T.	John H. Coryell.
Shortsville.	Ontario	740	14	53.2	+ 1.7	82	7	27	31	33	3.01	+ 0.17	1.26	0.5	C. H. Letting.
Skaneateles.	Onondaga	18	-	-	-	-	-	-	-	-	4.50	+ 0.77	1.50	1.0	John Durkan.
Syracuse.	do	597	11	53.5	+ 2.5	79	10	29	31	37	3.29	+ 0.08	1.23	1.2	U. S. Weather Bureau.
Tupper Lake.	Franklin	1,522	13	48.8	+ 3.5	80	8	18	31	39	7.84	+ 4.29	1.31	0.5	Rev. A. W. Maddox.
Volusia.	Chautauqua	1,167	14	50.8	- 0.1	79	8†	25	32	31	5.79	+ 1.95	1.19	2.0	Benjamin Breads.
Wanakena.	St. Lawrence	1,600	3	49.4	-	83	7	17	31	48	7.46	-	1.62	1.4	H. P. Dunlap.
Watertown.	Jefferson	540	21	52.0	+ 2.5	78	7	25	31	26	6.93	+ 3.18	1.97	2.0	O. F. Corwin.
Wedgewood.	Schuyler	1,430	24	52.0	+ 3.0	81	6	28	31	35	5.58	+ 2.18	1.48	1.0	John R. Rogers.
Westfield.	Chautauqua	837	17	53.1	+ 1.2	83	7†	30	22	32	6.09	+ 2.35	1.17	1.4	M. N. Stewart.
York.	Livingston	760	1	54.3	-	89	7	26	31	41	3.12	-	0.69	1.0	U. S. Weather Bureau.
<b>Vermont.</b>															
Burlington.	Chittenden	404	5	51.5	+ 4.6	78	10	24	31	27	2.90	- 0.26	0.87	T.	U. S. Weather Bureau.
Cornwall.	Addison	517	19	54.6											

TABLE 2.—*Daily precipitation for October, 1913. District No. 4, Lake Region.*

Stations.	Watershed.	Day of month.																														Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
<i>Minnesota.</i>																																	
Cloquet	L. Superior	.11	-	.20	.60	.12	-	-	-	T.	1.23	T.	-	-	-	-	-	-	-	T.	T.	T.	T.	.30	.56	T.	.20	.08	.01	-	3.32		
Duluth	do	.10	.01	.83	.13	.27	-	-	T.	1.44	T.	-	-	-	-	-	-	-	-	T.	T.	T.	T.	.02	.44	T.	.08	.01	-	3.33			
Floodwood	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Grand Marais	do	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Stephens Mine	do	.50	.10	.90	.60	T.	T.	T.	.50	T.	T.	-	-	-	-	-	-	-	.09	-	T.	.10	T.	.32	.18	T.	-	-	-	3.29			
Two Harbors	do	.08	-	.25	.55	T.	.10	-	1.48	-	-	-	-	-	-	-	-	-	-	-	-	.02	-	-	-	-	-	-	-	-	2.45		
Virginia	do	.25	-	.70	.67	.04	.12	-	.04	.60	.04	-	.06	-	-	-	-	-	-	-	-	.20	-	-	.24	-	.30	.10	.06	T.	-	3.41	
<i>Wisconsin.</i>																																	
Appleton	Fox	.29	-	.49	.05	-	-	-	T.	.82	.08	-	-	-	-	-	-	.02	.30	-	T.	.13	.02	.05	.45	T.	T.	T.	T.	2.80			
Ashland	L. Superior	.14	.01	.80	.50	.03	.49	T.	T.	.83	.01	-	-	-	-	-	-	-	-	T.	*	.08	.62	T.	.15	-	-	-	3.73				
Bayfield	do	.12	.13	T.	.96	.04	.04	.49	T.	-	.60	T.	.02	-	-	-	-	-	-	-	-	.62	-	.04	-	-	-	-	-	4.04			
Cecil	Fox	.13	.07	.54	-	T.	T.	T.	T.	.24	-	-	-	-	-	-	-	.17	-	-	-	.05	.51	-	.31	-	-	-	-	1.46			
Cornucopia	L. Superior	.13	.19	.69	.84	T.	.41	-	.90	T.	-	-	-	-	-	-	-	-	.05	.10	-	.09	.01	-	-	-	-	-	-	-			
Crandon	Fox	.25	-	.60	-	-	-	.04	.60	-	-	-	-	-	-	-	-	.12	-	-	T.	-	.02	.05	.83	-	.06	-	-	2.50			
Florence	Menomonee	.29	-	.43	-	-	-	-	.13	.04	-	-	-	-	-	-	-	.20	-	-	T.	-	.08	.02	.02	.02	.02	.02	.02	3.19			
Fond du Lac	Fox	.25	-	.25	.05	-	-	-	.130	.16	-	-	-	-	-	-	.05	.63	-	T.	.27	T.	.02	.50	.08	.13	.02	.02	.02	3.69			
Grand River Locks	do	.05	.35	T.	.40	.07	-	T.	.15	.14	-	-	-	-	-	-	.17	-	.10	.06	-	.03	.34	-	.08	.02	.02	.02	.02	2.03			
Green Bay	L. Michigan	.40	-	.11	.18	.06	-	T.	.84	-	-	-	-	-	-	-	.04	.41	-	T.	.03	.01	.40	T.	.07	-	-	-	2.55				
High Falls	do	.01	-	.94	.12	-	.10	.70	.08	-	-	-	-	-	-	-	.14	-	-	T.	-	.45	T.	T.	-	-	-	-	2.04				
Iron River	L. Superior	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.02	.32	.13	.19	.38	-	3.90			
Keweenaw	L. Michigan	.71	-	.36	.09	-	-	-	.15	-	-	-	-	-	-	-	.55	-	-	-	.02	.36	.25	.36	-	-	-	-	-	3.75			
Manitowoc	do	.25	-	.30	.07	-	-	-	.150	T.	-	-	.64	-	-	-	.02	-	-	-	.03	.42	.12	.03	-	-	-	-	-	2.67			
Menasha	Fox	.20	-	.43	-	-	-	.03	-	.12	-	-	.37	-	-	-	.03	.77	T.	.07	T.	.02	.02	.19	.22	.30	.42	.04	-	2.08			
Monomonee Falls	L. Michigan	.21	-	T.	.25	-	-	-	.32	-	-	.14	.66	-	-	.13	.T.	.03	-	.19	.23	.02	.40	T.	.05	.10	.02	.02	.02	3.56			
Milwaukee	do	.04	-	T.	.25	-	-	.36	-	.12	T.	.50	-	-	.20	.05	-	.13	.T.	.10	.05	.55	-	-	-	-	-	-	-	2.23			
New London	Fox	.45	-	.36	-	.12	T.	-	.60	-	-	.33	-	-	-	.13	-	.36	-	.42	-	-	.05	T.	-	-	-	-	-	2.16			
Oconto	L. Michigan	.25	-	.37	-	-	-	-	.60	-	-	.40	-	-	-	.10	-	.48	-	.41	.16	-	.19	.38	-	-	-	-	-	1.90			
Oshkosh	Fox	T.	.25	-	.32	T.	.04	T.	.74	.06	-	.43	-	-	-	.04	.02	T.	.10	-	.42	-	.05	T.	-	-	-	-	-	1.53			
Pine River	do	.22	-	T.	.35	-	-	T.	.84	.08	-	.48	-	-	-	.12	.23	-	.13	.03	.08	.07	.18	.15	.30	.38	.10	-	4.08				
Plum Island	L. Michigan	.49	-	.19	.24	-	-	T.	.83	.08	-	.30	-	.06	.74	.04	.10	.42	.19	.22	.48	.10	-	.22	.38	.10	-	2.75					
Plymouth	do	.19	-	.22	T.	.11	-	T.	.40	.01	-	.30	-	.03	.90	.06	.10	.42	.19	.22	.48	.10	-	.22	.38	.10	-	2.98					
Port Washington	do	.30	-	.40	.06	.66	-	T.	.62	.03	T.	.12	.23	-	.48	.04	.10	.42	.19	.22	.48	.10	-	.22	.38	.10	-	2.86					
Racine	do	.16	-	T.	.35	.66	-	T.	.62	.03	T.	.12	.23	-	.48	.04	.10	.42	.19	.22	.48	.10	-	.22	.38	.10	-	2.85					
Ripon	Fox	.02	.31	-	.35	.04	.01	.04	.78	.22	-	T.	.12	.23	-	.48	.04	.10	.42	.19	.22	.48	.10	-	.22	.38	.10	-	2.85				
Sheboygan	L. Michigan	.20	-	.30	.03	T.	.02	T.	.70	.07	-	T.	.76	-	.57	-	T.	.10	.05	.35	.04	.19	T.	.02	.02	.02	.02	.02	3.36				
Sturgeon Bay	do	T.	.26	-	.48	T.	.11	.03	.08	.13	T.	-	-	-	-	-	-	T.	.02	.47	-	.04	-	-	-	-	-	3.57					
Superior	L. Superior	.08	-	1.04	.08	.61	-	T.	.05	.45	.01	-	-	-	-	.20	-	T.	.03	-	.35	-	.04	-	-	-	-	-	2.47				
Waupaca	Fox	.80	-	.59	.11	-	.10	.25	-	-	-	-	-	-	-	.20	-	T.	.03	-	.35	-	.04	-	-	-	-	-	-				
<i>Illinois.</i>																																	
Chicago	L. Michigan	.02	-	-	.23	T.	.11	T.	T.	.30	.04	-	-	-	-	.22	.30	T.	T.	.13	.36	.02	-	.19	.10	.01	.02	.18	-	2.23			
Highland Park	do	T.	-	.48	T.	....	T.	.04	.41	....	T.	-	.1.27	T.	-	-	-	-	T.	.21	.15	-	*	.43	-	.17	-	-	-	-	3.16		
<i>Indiana.</i>																																	
Auburn	Maumee	.74	-	.01	-	-	-	T.	.47	-	-	-	-	-	-	.19	.52	-	.10	T.	.53	.39	.13	-	.04	.12	.02	.02	.02	3.37			
Berne	do	.04	.04	-	.01	-	-	T.	.44	-	-	-	-	-	-	.37	T.	.02	.14	T.	.69	.49	.04	-	.06	.02	.02	.02	.02	2.32			
Fort Wayne	do	.02	-	.01	-	-	-	T.	.43	-	-	-	-	-	-	-	-	-	-	T.	.02	.14	-	-	-	-	-	-	2.33				
Hammond	L. Michigan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Howell	St. Joseph	.40	.05	-	.08	-	-	T.	.02	T.	.80	-	-	-	-	.14	.57	T.	.80	-	T.	.1.01	T.	-	.27	-	.20	.43	-	4.32			
Notre Dame	L. Michigan	.01	-	.22	T.	.15	.18	T.	.26	.33	T.	-	-	-	.30	.44	-	.14	.07	.68	.33	T.	-	.12	.23	.10	.10	.10	3.22				
Whiting	L. Michigan	-	-	.11	T.	.15	.18	T.	.26	.33	T.	-	-	-	.30	.30	-	.14	.05	.39	.17	T.	-	.36	T.	.01	.24	.48	-				
<i>Michigan—Upper Peninsula.</i>																																	
Baraga	L. Superior	.20	-	.20	-	-	-	T.	.40	.20	.20	-	-	-	-	.20	-	.20	-	T.	.40	.50	-	.20									

TABLE 2.—*Daily precipitation for October, 1913. District No. 4—Continued.*

TABLE 2.—*Daily precipitation for October, 1913. District No. 4—Continued.*

Stations.	Watershed.	Day of month.																														Total.						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						
<b>Ohio—Continued.</b>																																						
Hiram.	Lake Erie.	.31	.75	.03								.31	.08	.05			T.	.10	.18	.04	.52	.50	T.	.1.06	T.		T.	.26	.60	.05	4.84							
Hudson.	do.	.20	.82	.05								.45	.10				T.	.12	.18	.10	.32	.46	.08	.94	.02		.01	.10	.50	.11	4.56							
Lima.	Maumee.	.20									T.	.39							.17	.10		.05		.33	.20								2.61					
Medina.	Lake Erie.	.55	1.03									.31	.12						.08		.19	.48	.03	.10									4.11					
Montpelier.	Maumee.	.76	.08									.38	T.							.46			.09	T.	.22	.87	.23						3.44					
Napoleon.	do.	.06	.09									.32							.33		.46	.10		.71	.53								2.80					
New Bremen.	do.	.03	.04	T.	T.						.02	.25							.20	T.	.65		.30	.20	.39								2.48					
North Royalton.	Lake Erie.	.77	.32	.05								.46	.08						.06	.05	.20	.28	.25	.11	1.08								4.13					
Norwalk.	do.	.70	.46	.01								.35	.06						.01	.02	.02	.42	.05	.12	.69	.02								3.35				
Oberlin.	do.	.66	.38									.33	.08						.08	.01	.04	.56		.05	.01	.01	T.							2.99				
Ottawa.	Maumee.	.51	.18	.03	T.						T.	.44	T.						.58		T.	.25	.30	.55		T.	.80	T.						3.65				
Sandusky.	Lake Erie.	.06	.37								T.	.12	T.						.02	T.	.12	.47	.01	.21	.26	.49								2.37				
Tiffin.	Sandusky.	.50	.31	.02	T.						T.	.20	T.						.05	.01	.01	.58	.03	.10	.38	.65								3.52				
Toledo.	Maumee.	.07	.27	T.	T.						T.	.39	T.						.28	T.	.36	.67	.05	.40	.60	.12								3.62				
Upper Sandusky.	Sandusky.	.62	.30	T.							T.	T.								T.	.68	.72	.22	.68	T.	.44	.16	T.						3.21				
Vickery.	Lake Erie.	.42	.43									.02							.02	.02	.08	.50	T.	.22	.18	.61						3.04						
Wapakoneta.	Maumee.	.16	.27	T.	T.						T.	.30							.30	T.	.60	.02	.29	.17	.39								2.95					
Wauseon.	do.	.07	.17								T.	.61	.02						.38	T.	.41	.03	.52	.46	.06								3.18					
Wickliffe.	Lake Erie.	.56	1.08	T.								.35	.03	.16					.01	.08	.13	T.	.13	T.	.1.17								5.09					
<b>Pennsylvania.</b>																																						
Erie.	Lake Erie.	.39	.71									.29	.18						.02	.10	.11	.17	.95	.13	T.	.1.21	.03						4.84					
<b>New York.</b>																																						
Adams Center.	L. Ontario.	.71	.02									.44	.15	.05	T.				T.	.67	.05	1.65	.80	.10			.45	.55	.35	.02	.13	.30	.06	.05	6.59			
Angelica.	Genesee.	.13	.28	.19	T.							.26	.01	.07	T.				T.	.16	.03	.76	.20	.02			.33	.16	.56	.02	.04	.37	.10	.39				
Appleton.	L. Ontario.	.02																	T.	.07	.01	T.	.31	T.			.95	T.	T.						2.12			
Auburn.	Oswego.																																					
Avon.	Genesee.	T.	T.									.80	T.						T.	.28	T.	.77	.05	T.			.42	.90			T.					.09	3.31	
Brockport.	L. Ontario.											.77	.03						T.	.20	T.	.74	.02	T.	T.		.84	.03	.11						.05	.07	2.88	
Buffalo.	Lake Erie.	.08	.56									.41	.13						.01		.22	.08	T.	.06	T.	.1.13	.06	.13							3.65			
Canisius College.	do.	.52	T.									.58	.11	.08					.09	T.	.05	.25		.06	T.	.1.17	.03	.05						3.69				
Canton.	Grass.	1.03	.03	T.								.64							.21	T.	.04	.04	.09		.01	.49	.11	.47							3.87			
Cape Vincent.	St. Lawrence.	.46										.54	.09						T.	.21	T.	.54	.1.58				.78	.30							4.62			
Chazy.	Champlain.	1.20	.22																																			2.99
Chestnut Lawn.	Genesee.	.17	.31	.17								.63	.10	.03					.20		.23	.55	.51				.38	.11	.41						4.25			
Dannemora.	Champlain.	1.04	.98									T.	.10						.20		.1.10	.40	.02				.10	.51	.02	.25						4.98		
Elba.	L. Ontario.	T.	T.									.52							.08		.21	T.				.49	.11	T.							1.60			
Fayetteville.	Oswego.	.22	.16	.11								.62	.21						.17	T.		.02	1.36	.72				.24	.11	.06	T.					4.13		
Gabriels.	St. Regis.	.70	.66									.15	.41						.07	T.	.50	.90				.15	.26							.03	.21	.01	4.36	
Geneva.	Oswego.	.04										.47							.13		.61	.24				.50	.17	.58	.02	.02	T.					4.03		
Harkness.	L. Champl'n	1.25	.23										.16	.04					.14		.04					.1.16	.07								3.94			
Hemlock Lake.	Genesee.	.14	.12									.62							.03		.19	.87	*				.38	*							4.54			
Hunt.	do.	.20	.42									.75							.16		.86					.40	.07	.53							2.40			
Ithaca.	Oswego.	.01	.15	.03								.06							.09	T.	.07	.66	.00	.08			.20	.10						.05	.02	3.63		
Keene Valley.	Au Sable.	.04	.64	.11								.06							.36	.11		.07	T.	.05			.61	.04	.16						4.94			
King Ferry.	Oswego.	T.	.09									.66	.10						.06		.07		.83	.16			.65	.65	.12	.09					.04		5.64	
Lake George.	Champlain.	.03	.15	.06								T.							.07		.83	.16				.22		.45	T.								4.28	
Lake Placid Club.	Au Sable.	.87	.07	.02								.12	.04						.18	.19		T.	.05			.21	.43	.15	.22	.18	.46							4.88
Lauterbrunnen.	Genesee.	.20	.75	.09								.66	.09	.03					.21	.07	.73	.51	.02	.01				.28	.12	.38							4.71	
Lockport.	L. Ontario.	T.										.31														.18												
Lowville.	Black.	.01	.56	.09								.44	.06						.11		.03		.01	1.70	.04			.28	.45	.18	.06	.14	.06	.01	7.05			
Moirs.	St. Lawrence.	.1.43	.26									.51	T.						.08		.06					.06												

TABLE 3.—Maximum and minimum temperatures for October, 1913. District No. 4, Lake Region.

Date.	Duluth, Minn.		Wisconsin.						Chicago, Ill.		Fort Wayne, Ind.		Michigan.															
			Florence.		Green Bay.		Milwaukee.						Escanaba.		Ewen.		Houghton.		Marquette.		Sault Ste. Marie.		Alpena.		Battle Creek.		Cadillac.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.		
1....	63	45	71	43	73	50	73	53	73	55	70	54	65	46	69	44	75	49	68	42	65	46	71	55	72	49		
2....	67	41	58	45	64	48	66	51	68	54	62	52	55	43	55	42	54	46	58	50	59	53	57	53	66	50		
3....	77	49	72	33	69	42	72	49	73	52	68	49	60	38	79	40	73	45	65	41	62	47	59	50	65	54		
4....	61	46	74	58	80	59	70	57	78	58	78	46	65	54	84	51	66	52	74	48	63	49	75	45	74	53		
5....	59	47	69	55	70	59	68	57	69	57	78	54	61	57	74	53	67	56	61	55	67	56	74	52	65	57		
6....	50	44	67	50	73	55	68	61	73	62	80	61	64	50	56	50	62	52	69	56	71	57	74	52	70	59		
7....	60	38	63	53	67	52	75	56	76	62	86	58	63	52	65	41	66	47	76	48	68	56	83	54	77	62		
8....	60	47	62	44	60	49	61	55	64	59	79	61	62	43	65	37	59	44	68	42	64	53	76	61	65	56		
9....	57	48	61	39	63	54	61	56	68	58	84	65	60	50	63	46	64	48	63	56	62	56	83	57	75	54		
10....	59	40	67	54	76	54	77	59	83	66	86	63	63	56	72	49	65	57	66	55	70	59	83	58	74	61		
11....	51	34	60	38	57	42	61	44	67	46	67	43	61	43	49	40	62	44	61	43	64	43	56	52	75	44		
12....	53	32	51	35	58	44	62	48	66	48	63	41	55	38	48	38	52	40	50	38	58	38	60	40	56	45		
13....	63	37	58	27	63	38	59	47	66	54	62	40	57	33	63	35	60	39	56	31	58	33	59	32	56	32		
14....	74	42	69	45	71	57	73	54	75	55	73	47	60	55	77	55	72	54	60	48	62	48	71	38	68	47		
15....	50	34	62	40	61	45	64	50	67	57	74	51	57	42	59	43	62	44	55	44	66	47	69	50	62	51		
16....	44	36	48	38	52	43	55	44	57	53	68	55	50	42	47	39	46	43	48	38	53	42	57	47	52	40		
17....	42	29	40	34	45	35	51	42	57	44	64	50	45	36	40	32	44	37	38	37	54	42	61	47	48	40		
18....	53	31	54	30	53	35	53	41	52	45	51	37	52	33	46	31	50	34	42	33	48	36	51	42	46	35		
19....	42	29	60	27	53	35	53	41	52	45	51	37	52	33	52	32	54	39	52	29	49	30	53	31	50	29		
20....	30	17	44	25	48	33	49	27	49	31	48	34	48	34	40	27	43	32	45	34	44	35	47	34	45	30		
21....	29	14	28	24	38	31	37	25	39	27	38	29	29	35	30	30	24	32	29	36	31	40	32	43	32	40		
22....	31	17	36	23	38	29	38	32	41	32	52	29	38	24	36	24	37	28	40	29	41	35	39	30	37	31		
23....	48	28	49	29	50	30	51	33	51	36	52	39	48	32	47	29	51	30	45	33	44	34	42	31	45	30		
24....	49	34	47	38	56	38	61	40	60	41	65	43	48	39	47	42	45	38	49	41	55	36	54	32	55	37		
25....	39	32	43	26	53	33	54	42	53	48	53	37	47	32	44	32	48	36	46	36	50	34	51	34	51	40		
26....	37	23	46	35	47	35	50	36	59	38	59	30	47	34	42	35	45	34	44	37	49	40	55	27	50	34		
27....	39	20	41	30	44	32	46	38	48	42	40	40	31	41	33	37	32	39	31	46	37	42	28	48	32			
28....	36	20	40	24	42	29	45	36	47	38	46	40	40	29	38	29	37	32	38	33	43	38	47	33	40	32		
29....	30	18	38	25	39	29	45	36	47	34	48	32	38	29	30	26	35	30	34	24	40	32	44	38	38	29		
30....	29	16	32	22	37	26	39	30	42	34	42	32	33	23	32	27	34	27	31	18	34	25	42	32	35	28		
31....	36	16	34	21	37	21	39	25	40	27	40	29	41	33	43	34	48	34	40	37	24	37	24	38	30	32		
Mns..	49.0	32.4	53.6 <sup>b</sup>	36.0 <sup>b</sup>	55.9	40.5	57.2	43.6	59.9	46.7	62.1	44.6	51.9	38.7	—	—	51.7	37.2	52.7	40.0	52.0	38.7	54.2	41.6	58.5	42.0	55.9	41.5

Date.	Michigan.				Ohio.				Erie, Pa.				New York.				Vermont.								
	Detroit.		Muskegon.		Cleveland.		Lima.		Sandusky.		Toledo.		Buffalo.		Canton.		Rochester.		Syracuse.		Burling- ton.	North- field.			
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.			
1....	73	57	70	46	72	55	64	58	71	55	68	58	73	56	63	56	60	51	63	32	68	54	63	53	58
2....	59	52	62	45	59	52	60	54	64	53	61	52	61	53	60	54	60	55	64	50	59	52	55	50	45
3....	63	53	55	42	66	50	59	49	61	48	58	48	66	51	55	55	56	51	63	48	63	50	50	56	46
4....	74	50	67	44	76	47	64	46	73	44	68	47	73	48	64	49	62	48	65	43	68	47	62	49	42
5....	72	56	74	42	75	55	80	51	79	48	79	50	77	54	76	52	76	55	72	41	73	43	75	53	36
6....	76	63	72	43	78	58	72	63	80	60	72	61	76	63	76	61	79	52	77	58	78	53	75	51	44
7....	82	61	77	42	84	59	81	57	84	56	89	59	81	55	82	58	82	63	81	55	83	58	75	53	48
8....	75	61	75	60	67	58	78	59	80	55	80	60	78	61	82	60	78	77	80	61	78	62	75	61	55
9....	80	64	79	59	74	56	80	63	83	60	80	64	83	64	80	64	77	65	78	62	77	64	76	60	52
10....	80	64	84	58	81	63	81	62	85	63	84	62	84	64	82	62	79	60	81	61	78	58	77	55	44
11....	70	47	78	52	66	42	71	50	75	48	72	46	73	47	74	54	73	51	76	51	80	52	72	52	61
12....	58	43	65	39	60	40	65	39	62	42	61	41	62	48	55	45	65	45	62	48	58	43	60	41	54
13....	58	37	60	37	58	34	63	42	60	37	64														